Status of the Claims

1. (Currently Amended) A process for the preparation of a heat-stable antimony free polyester of neutral color comprising the esterification of an aromatic dicarboxylic acid or transesterification of a lower alkyl ester of an aromatic dicarboxylic acid with an aliphatic diol in the presence of 20 to 120 ppm of a transesterification metal catalyst, which is added in the form of a metal compound, and subsequent polycondensation, wherein after the esterification or transesterification has ended, a complexing agent selected from the group consisting of phosphoric acid, phosphorous acid, phosphonic acid and the esters of such acids is added ~~to the esterification batch or transesterification batch~~ in an amount which is 100% of the amount equivalent to the transesterification catalyst employed and up to 99% of the amount equivalent to cobalt to be employed, and wherein ~~up to~~ between 1 and 80 ppm of the cobalt in the form of a cobalt compound is added ~~to the batch~~, and the polycondensation is carried out without the addition of antimony, in the presence of 1 to 10 ppm of titanium, which is added in the form of a titanium compound.

2. (Previously Presented) The process as claimed in claim 1, wherein, the complexing agent is added to the esterification or transesterification batch in an amount of 100% of the amount equivalent to the transesterification catalyst employed and 90 to 99% of the amount equivalent to the cobalt to be employed.

3. (Previously Presented) The process as claimed in claim 1, wherein a melt is formed during the polycondensation which is carried out in the presence of 1 to 10 ppm of titanium up to an intrinsic viscosity, measured in dichloroacetic acid at 25°C, of 0.4 to 0.9 dl/g and up to a carboxyl group concentration of 10 to 50 mmol/kg in the melt, and then wherein the polycondensation is continued up to the desired end viscosity in the solid phase.

4. (Original) The process as claimed in claim 1, wherein 20 to 40 ppm of cobalt in the form of a cobalt compound is added to the batch.

5. (Previously Presented) The process as claimed in claim 1, wherein the polycondensation is carried out in the presence of 2-8 ppm of titanium.

6. (Previously Presented) The process claimed in claim 1, wherein the polycondensation is carried out in the presence of 100 to 500 ppm of organic crosslinking agents.

7. (Previously Presented) The process as claimed in claim 1, wherein the polycondensation is carried out in the presence of up to 25 ppm of an optical brightener.

8. (Withdrawn) The process as claimed in claim 1 comprising the esterification of an aromatic dicarboxylic acid or hydrocarboxylic acid or trasnesterification of a lower aliphatic ester of an aromatic dicarboxylic acid or hydrocarboxylic acid with an aliphatic diol and subsequent polycondensation, wherein 80 to 100 mol% of an aromatic dicarboxylic acid of the formula III

$$HOOC—X—COOH \qquad (III)$$

or a lower aliphatic ester thereof and

0 to 20 mol% of an aromatic hydroxycarboxylic acid of the formula IV

$$HO—X^1—COOH \qquad (IV)$$

or a lower aliphatic ester thereof,

are esterified or transesterified with a diol of the formula V

$$HO—Y—OH \qquad (V)$$

in which

X is, based on the total amount of di- and hydroxycarboxylic acids, more than 80 mol% of aromatic radicals having 5 to 16 carbon atoms and not more than 20 mol% of aliphatic radicals having 4 to 10 carbon atoms,

X^1 is a p-phenylene radical,

Y is, based on the total amount of transesterified or esterified diols, at least 80 mol% of alkyene or polymethylene groups having 2 to 4 carbon atoms or cycloalkane or dimethylene-cycloalkane groups having 6 to 10 carbon atoms and not more than 20

mol% of straight chain or branched alkanediyl having 4 to 16 carbon atoms or radicals of the formula --$(C_2H_4—O)_n— C_2H_4—$, in which n is an integer from 1 to 40.

9. (Withdrawn) The process as claimed in claim 8, wherein X is based on the total amount of di- and hydroxycarboxylic acids, 90 to 100 mol% of p-phenylene radicals, 0 to 7 mol% of m-phenylene radicals and 0 to 5 mol% of aliphatic radicals having 4 to 10 carbon atoms,

X^1 is a p-phenylene radical,

Y is, based on the total amount of transesterified or esterified diols, at least 90 mol% of alkyene or polymethylene groups having 2 to 4 carbon atoms or cycloalkane or dimethylene-cycloalkane groups having 6 to 10 carbon atoms and not more than 10 mol% of straight chain or branched alkanediyl having 4 to 16 carbon atoms or radicals of the formula --$(C_2H_4—O)_n— C_2H_4—$, in which n is the number 1 or 2 .

10. (Previously Presented) A heat-stable, antimony-free polyester of neutral color based on an aromatic dicarboxylic acid and an aliphatic diol, prepared by the process as claimed in claim 1, in which, in the non-matted state, its color number components are

a* in the range from -3 to +3,

b* in the range from -6 to +6 and

L* in the range from 55 to 75.

11. (Previously Presented) A heat-stable, antimony-free polyester of neutral color based on an aromatic dicarboxylic acid and an aliphatic diol as claimed in claim 10, which comprises 1 to 10 ppm of titanium, 20 to 120 ppm of a transesterification catalyst metal in the form of catalytically inactive complexes with a complexing agent selected from the group consisting of phosphoric acid, phosphorous acid, phosphonic acid and the esters of such acids, and 0 to 80 ppm of cobalt, which is partly present in the form of catalytically inactive complexes with a complexing agent selected from the group consisting of phosphoric acid, phosphorous acid, phosphonic acid and derivatives thereof.

12. (Previously Presented) A heat-stable, antimony-free polyester of neutral color as claimed in claim 10, which comprises 2 to 8 ppm of titanium, 50 to 90 ppm of manganese in the form of catalytically inactive complexes with a complexing agent selected from the group consisting of phosphoric acid, phosphorous acid, phosphonic acid and the esters of such acids, and 20 to 40 ppm of cobalt, which is partly present in the form of catalytically inactive complexes with a complexing agent selected from the group consisting of phosphoric acid, phosphorous acid, phosphonic acid and derivatives thereof.

13. (Original) A heat-stabled, antimony-free polyester of neutral color as claimed in claim 10, in which, in the non-matted state, its color number components are
a* in the range from -2 to +2,
b* in the range from -3.5 to +3.5 and
L* in the range from 60 to 70.

14. (Previously Presented) A heat-stable, antimony-free polyester of neutral color as claimed in claim 10, in which 90 to 99% of the cobalt is in the form of one or more catalytically inactive complexes with a complexing agent selected from the group consisting of phosphoric acid, phosphorous acid, phosphonic acid and the esters of such acids.

15. (Original) A heat stable, antimony-free polyester of neutral color as claimed in claim 10, which comprises 5 to 25 ppm of an optical brightener.

16. (Withdrawn) A heat stable, antimony-free polyester of neutral color as claimed in claim 10, wherein its polymer chains comprise 80 to 100 mol% of structural groups of the formula VI

$$—[CO—X—CO—O—Y—O]— \quad (VI)$$

and 20 to 0 mol% of structural groups of the formula VII

$$—[CO—X^1—O]— \quad (VII)$$

in which

X is more than 80 mol% of aromatic radicals having 5 to 16 carbon atoms and not more than 20 mol % of aliphatic radicals having 4 to 10 carbon atoms,

X^1 is the p-phenylene radical,

Y is at least 80 mol% of alkyene or polymethylene groups having 2 to 4 carbon atoms or cycloalkane or dimethylene-cycloalkane groups having 6 to 10 carbon atoms and not more than 20 mol% of straight chain or branched alkanediyl having 4 to 16 carbon atoms or radicals of the formula $—(C_2H_4—O)_n— C_2H_4—$, in which n is an integer from 1 to 40.

17. (Withdrawn) A heat stable, antimony-free polyester of neutral color as claimed in claim 16, which is comprised of strucvtural groups of the formula IV in which X is 90 to 100 mol% of p-phenylene radicals, 0 to 7 mol% of m-phenylene radicals and 0 to 5 mol% of aliphatic radicals having 4 to 10 carbon atoms,

Y is at least 90 mol% of alkyene or polymethylene groups having 2 to 4 carbon atoms or cycloalkane or dimethylene-cycloalkane groups having 6 to 10 carbon atoms and not more than 10 mol% of straight chain or branched alkanediyl having 4 to 16 carbon atoms or radicals of the formula $—(C_2H_4—O)_n— C_2H_4—$, in which n is the number 1 or 2 .

18. (Withdrawn) A heat stable, antimony-free polyester of neutral color as claimed in claim 16, which is comprised of structural groups of the formula IV in which X is 93 to 99 mol% of p-phenylene radicals.

19. (Original) A heat-stable, antimony-free polyester of neutral color as claimed in claim 10, in which the catalytically inactive complexes of manganese and of cobalt are complexes with phosphorous acid or an ester thereof.

20. (Previously Presented) A heat-stable, antimony-free polyester of neutral color as claimed in claim 10, which further comprises up to 1000 ppm of crosslinking structural groups.

21. (Previously Presented) The process as claimed in claim 1, wherein the transesterification catalyst is manganese in the form of a manganese compound.

22. (Previously Presented) The process as claimed in claim 1, wherein the polycondensation is carried out in the presence of up to 1000 ppm of organic crosslinking agents.

23. (Previously Presented) The process as claimed in claim 1, wherein the polycondensation is carried out in the presence of up to 50 ppm of an optical brightener.

24. (Previously Presented) The process as claimed in claim 3, wherein the end viscosity of the heat-stable antimony-free polyester is 0.7 to 2.0 dl/g, measured in dichloroacetic acid at 25°C.

25. (Previously Presented) A heat-stable, antimony-free polyester of neutral color as claimed in claim 11, which further comprises up to 50 ppm of an optical brightener.

26. (Previously Presented) A heat-stable, antimony-free polyester of neutral color as claimed in claim 12, which further comprises up to 25 ppm of an optical brightener.

27. (Withdrawn) The process as claimed in claim 1, further comprising the esterification of a hydroxycarboxylic acid or transesterifaction of a lower aliphatic of a hydroxycarboxylic acid with an aliphatic diol and subsequent polycondensation.

28. (Withdrawn) A heat-stable, antimony-free polyester of neutral color based on an aromatic dicarboxylic acid and an aliphatic diol prepared by the process as claimed in claim 27, in which, in the non-matted state, its color number components are

a* in the range from –3 to +3,

b* in the range from –6 to +6 and

L* in the range from 55 to 75.

29. (Previously Presented) The process as claimed in claim 1, wherein the titanium compound is potassium titanyloxalate.